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Forestry

FARM WOODLANDS AND THE WAR

BY

HENRY S.olon GRAVES
Forester, Forest Service

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FARM WOODLANDS AND THE WAR.

By **Henry S. Graves**,
Forester, Forest Service.

THE war was everybody's war, and the farmer's part in winning it was no less important than the cannon maker's. Everybody knows that this was true with regard to food. It was true also with regard to many other things. The woodlands on our farms, for instance, supplied material for propellers to drive airplanes, for treenails to hold wooden ships together, for spokes that went into wagons, trucks, and ambulances, for gunstocks, trench tools, and many other articles necessary in attacking the enemy or in giving comfort to our own men.

The end of the war has brought with it no diminution in the importance of proper utilization and care of the farm woodlands. Above all, it is essential to make the most of the lessons that may be drawn from the war regarding the future of farm woodlands and their place both in the management of the farm and in our national economy.

FIRST WAR DEMANDS.

One of the first war demands was for millions of boxes, crates, and containers of all kinds, both for use in shipping munitions, machinery and equipment, and supplies overseas, and for the needs in this country. Every purchasing branch of the Army and Navy, and the auxiliary organizations like the Red Cross and Y. M. C. A., demanded boxes in immense numbers. While most of the box material used during the war came from the larger lumber enterprises, nevertheless farms supplied in the aggregate large quantities, especially in New England and other regions where an abundance of second-growth white pine and other coniferous timber is found on farm woodlands within reach of existing mills. As the war increased the drain on labor, many small mills had to reduce output or shut down, so that the aggregate production of box material from the farm was not as great in the later as in the earlier months of the war; yet the service of the woodland on the farm for boxes remained a very substantial one.

Farm woodlands, however, were of even more importance in connection with the hardwoods used for such specialized purposes as wagons, gunstocks, airplane propellers, tools, etc. For some of the special wood materials the Government had to rely very largely upon what could be secured from farm wood tracts. This was because such species as walnut, ash, hickory, and black locust do not occur in great solid forests like pine, hemlock, and fir. They are mixed with other species, and scattered over a very wide area. Nearly half of the second-growth hickory, which is most prized for spokes, tool handles, and other uses requiring specially strong, hard wood, is in the hands of the small owner. The farmer owns also the greater proportion of the black locust. In short, in these special woods, the farmer is not merely a contributor along with large lumbermen; he is a pivotal producer. This means that he will also be the producer of these and many other wood products in the future.

BUILDING MATERIALS IN HEAVY DEMAND.

For the supplies of building material used in the war the Government turned to the established lumber industry, with its multitude of sawmills, backed by supplies of virgin forests of pine, Douglas fir, spruce, hemlock, and other species entering into the general lumber market; and the demand for millions of feet of lumber for cantonments, navy yards, wooden ships, and aircraft tended to throw into the background less conspicuous but equally important war requirements in great variety, which could be met only by drawing large quantities of material from the woodlands of the farms. This material left the farms in small quantities, inconspicuously, sometimes a tree at a time; but, like innumerable rivulets that join to make a great river, the small contributions joined to make up a large and absolutely indispensable stream of war supplies. The farm woodland has acquired a tremendous significance in our national as well as our local forest economy.

BLACK WALNUT MOST VALUABLE WOOD.

In the search for material for gunstocks and airplane propellers, the country was obliged to turn largely to the farm woodlands, for there is to be found most of the black walnut, the best native wood for such purposes. This provided the farmer with an opportunity for patriotic service in disposing of his walnut to firms holding Government war orders, and at the same time with a source of considerable revenue, since the prices paid for black walnut were among the highest ever paid for an American lumber. More than ever, black walnut trees on the farm may now be regarded as a bank account convertible at any time into ready cash. From the time when black walnut rose from a fence-rail wood to the most fashionable furniture material and the premier cabinet wood of the country, it has been a sort of aristocrat among woods; and now, because of the enormous demand for it and its exceptional qualities for gunstocks and airplane propellers, it has been called the " liberty " tree.

Black walnut has many good points. It holds its shape, is relatively free from checking and splitting in seasoning and during later exposure to the weather, is strong without being excessively heavy, withstands shock without injury, is dark in color so that it does not stain easily, and has the cabinet-wood qualities of being easily worked with tools and taking a high finish.

On account of the rapidly waning supply and the urgent war needs, the manufacture of black walnut into other than war materials was practically stopped by the Government, except in the case of wavy or curly grained wood not suitable for gunstocks and airplane propellers.

About 250,000,000 board feet or one-fourth of the total supply of standing black walnut, estimated at 1,000,000,000 board feet, was probably cut for war purposes. It is well, therefore, to consider carefully the matter of restocking the country with this useful and valuable tree. If the farmer will conserve young walnuts already growing and, by planting nuts or walnut seedlings in so-called waste places about the farm, provide a future supply of good timber, he will increase his future income and the sale value of his farm.

BLACK LOCUST FOR WOODEN SHIPS.

Black locust is as important to the wooden-ship builder as black walnut is to the maker of airplane propellers, and to a large extent he has to come to the same place for it—the farm woodland. For most of the ordinary purposes of the lumber industry, black locust is a most unpromising tree, because usually it is not a large nor a very straight tree; but for treenails it has no superior in the world. The treenails are great wooden pins 1½ inches in diameter and from 1 to 4 feet long, which are used to bind together the planking, frames, and ceiling of wooden ships. From 50,000 to 60,000 are required for a single hull. Up to July 20, 1918, the Emergency Fleet Corporation had purchased about 10,000,000 of them, and at that time it was thought that our shipbuilding program would absorb as many more.

Black locust is scattered here and there in small amounts, so that it had to be hunted out somewhat like black walnut, a tree at a time in the woods and pastures and on the farms. The total stand, however, is estimated at 1,000,000,000 board feet, so that the supply is adequate for all anticipated requirements.

CHESTNUT WOOD FOR TANNING.

The connection between the farmers' woodlands and the Army's shoes is not at first apparent; but to secure tanning extract for the immense quantity of heavy leathers required for these shoes placed a decided drain upon the woodlands of the southern Appalachians for chestnut wood and chestnut oak bark, and upon the northern forests for hemlock bark. In order to run the chestnut extract plants of the southern Appalachians to full capacity, a daily production of 3,800 cords of chestnut wood is required, or approximately 1,189,400 cords per year. Farmers throughout this region owning chestnut trees were able to derive a considerable revenue from this source.

ASH AND HICKORY FOR TOOLS AND VEHICLES.

The war uses of ash and hickory were very numerous and gave the farmers an additional market at increased prices for their logs. In airplane construction, ash constitutes about 15 per cent of the wood used. It is used primarily for the so-called ailerons, which require the best timber in rather long pieces. Large quantities of ash also entered into the handles of such tools as shovels, trench tools, boat-hooks, pike poles, etc. The ship-building program required considerable ash for interior finish as well as for oars for the lifeboats. Ash is also used in vehicles, being especially desired for shafts and tongues; and in harness for hames.

For tools of a different nature, such as axes, picks, carpenters' tools, etc., hickory is the favored wood, and the war demands for these were beyond imagination. War vehicles require considerable hickory, as it is used for ambulance and light truck spokes, and for single and double trees, poles, shafts, and various other parts.

OAK FOR SHIPS AND VEHICLES.

Of the farm woodland trees, probably oak is most plentiful. The best grade quarter-sawed white oak was in some demand for airplane propeller material; but the largest demand for oak was undoubtedly in connection with the ship-building program and the manufacture of army vehicles. The civilian can hardly imagine the number of escort wagons, ration cars, combat wagons, medical carts, ambulances, drinking-water carts, sanitary carts, field kitchens, motor trucks, cable carriers, gun carriages, etc., required by the army program. The chief use for oak in these various vehicles was for spokes. Farmers having good-grade white oak found a ready market for their output.

WOOD FOR ACETONE AND ALCOHOL.

The extra demands upon farm woodlands were not confined to the best grades of timber for products such as have already been indicated, although these were the products which furnish the farmer his greatest opportunity. Wood for fuel and for acetone and alcohol came more and more into demand as our war program expanded. Indeed, we could not have "carried on" without a greatly increased supply.

In the Revolutionary and Civil War days, charcoal made in pits was an important ingredient of powder, but since the advent of smokeless powder, this has become relatively unimportant. To-day charcoal is but a by-product of the destructive distillation of hardwoods, and was not as essential to the war as the acetone and alcohol produced by the process. Acetone is used in the manufacture of propellant explosives for all calibers of guns, and is an important material for use on the wing covers of airplanes, and since from 75 to 100 tons of wood are required to produce 1 ton of acetone, enormous quantities of wood were needed for this purpose alone. After the entrance of the United States into the war, it became necessary to construct several large distillation plants to produce acetone for war purposes. Wood alcohol is also used to a large extent in the manufacture of explosives.

WOOD FOR FUEL.

Among the numerous results of the entry of the United States into the war was the upsetting of the fuel situation. The production of coal not only fell off at the mines, but the transportation facilities of the country were so overburdened that the whole national life was embarrassed during the extremely cold winter of 1917–18. Wood, which has been more and more relegated, as a fuel, to rural districts, was in great demand not only on the farms and in the villages, but even in the cities and industries. It is safe to say that the normal wood production was increased by at least 30 per cent; for wherever wood could be secured by team or auto truck, it was used in large quantities even at the prevailing high prices, which ranged in many places from $15 to $20 a cord. The farmers were assured of a ready market for practically all the wood they could produce. The scarcity of labor was the only limiting factor.

The farm woodlands, as never before, have become an important national asset. The war gave the farmer an opportunity to develop this portion of his property because he could market for fuel the low-quality wood which heretofore has in many localities been unmerchantable. In this way poor trees may be removed to make room for more valuable individuals; and the mature trees of the valuable species can be removed at greater profit than ever before. On the other hand, there is a danger that unless proper care is taken, the woodlands may deteriorate as a result of cutting instead of being improved, as should be the case. The temptation is to remove only the high-priced trees or those easiest to get. To yield to it would inevitably result in the reproduction of the poor species and the rapid deterioration of the woodland. In parts of the South there is the added danger of erosion on scantily covered hill slopes.

WOOD-MARKETING KNOWLEDGE ESSENTIAL.

With the war ended, every facility should be given the farmers, through the cooperation of State foresters and the agricultural extension agencies, to secure more practical knowledge of the marketing of woods products and the improvement of the woodlands. The peace requirements of a rapidly expanding nation will be reflected in the demands upon local supplies of lumber. With the foreign market which will undoubtedly be open to our more valuable timbers, there is likely to be a pressure upon our forest resources which can be met only by efficient management. The farmers are best situated to take advantage of these improved conditions, for the highest farm-labor income can best be secured by a form of diversified farming which will give profitable employment for men and teams during seasons when they are not engaged in the more strictly farm operations.

COOPERATIVE WOOD HANDLING HELPFUL.

In order to organize better the woods industries of the farms, cooperative associations may possibly be developed similar to the cooperative creameries, live-stock shipping associations, and other associations which have done so much for the farmers. Woodland products are particularly difficult for the individual farmer to market profitably because they are harvested intermittently instead of annually and the owner never acquires that proficiency which comes from the constant repetition of the same operation. Another disadvantage is that rough woodland products are so bulky and heavy that, compared with dairy products, vegetables, cereals, or even hay, their marketing is necessarily restricted to relatively small geographical units. There is not, therefore, the same competition among buyers of logs and wood as among the buyers of dairy products, live stock, vegetables, and fruit.

In having logs custom sawed and disposing of the finished product, farmers are likewise at a disadvantage. They are not in touch with the distant markets, and often do not have enough of one grade to make a carload. By cooperating they may find it possible either to dispose of their logs to better advantage to the local mill man, or to operate their own mill, employing a skilled sawyer and grader, and thus marketing their product to much better advantage than has ever before been possible. It may not be too much to expect also that we shall in time have home wood industries similar to those which play an important part in the daily lives of the farmers in France and Switzerland.

WOODLANDS SHOULD BE IMPROVED.

In order to take advantage of the encouraging conditions which are almost sure to develop, the farmer should begin at once systematically to build up his woodlands, using the best information available as to the kinds and character of timber which will be in demand and which will be most profitable for him to produce. Several factors will influence him in his decisions: The relative value of the timber; the rate of growth; the local conditions for marketing; the susceptibility to damage by fire, insects, disease, cattle, etc. It is evident that there will always be a national demand for such high-class timbers as hickory or white oak, though the rate of growth is not as rapid as in the case of some other species. In most cases, greater profit can be derived by raising more rapid-growing, though in some cases less valuable, species, such as red oak, ash, basswood, poplar, and pine. In restricted areas trees like the black walnut can be grown; these combine high value with rapidity of growth. Obviously, a crop which can be matured in 50 years will be far more appealing to the average farmer than one which requires 80 years, even though in each case there are receipts from thinnings during the period of growth.

Too little emphasis has been placed, in the past, upon the importance of thinnings as a source of intermittent income. A forester's statement that it requires perhaps 50 years to mature a timber crop is naturally discouraging to a man of middle life. The fact is, however, that in any well-regulated woodland, especially of any size, periodic cuttings can be made, removing always the poorer varieties and the inferior specimens and giving the best trees an opportunity to develop into the most valuable classes of lumber. The utilization of all this material, which in a natural woodland dies and goes to waste, adds appreciably to the income which the owner eventually derives from the high-grade stock of the last cutting. In fact, if the income from such intermittent cuttings were placed in a savings bank, or were invested in some interest-bearing security, it would be found by the time of the final cutting to form a very large part of the total income from the crop.

In planning for the best use of farm woodlands, a distinction must be made between those on farms which contain large areas of tillable land, where the woodlot is relatively unimportant, and those on farms in hilly country where the proportion of woodland is relatively large. The first type is common throughout the Central States and in the better agricultural regions of the East. On such farms the woodland will always be a source of home supplies rather than a source of salable material.

TIMBER GROWING FOR HOME USE.

On every farm there is a constant demand for various classes of timber—lumber for barns, etc., fence posts, and fuel wood, to mention only a few. The difference in cost between these materials gathered from the farm and those purchased in the open market is considerable, and can not be neglected in any system of farm accounts. The main effort in the handling of the woodland on such a farm should be directed toward producing a sufficient amount of all woods materials required on the farm. Even farmers who burn coal will occasionally experience a fuel shortage, as in the winter of 1917–18, and a reserve of wood may save a great deal of discomfort.

COUNTY AGENTS SHOULD UNDERSTAND FOREST CONDITIONS.

In the hilly regions where the tillable lands are confined to small areas in the valley bottoms, entirely different problems obtain. In counties having such conditions the plan should be to develop especially the forests and the dependent industries. The county agent selected for such a county should have some knowledge of forest conditions and should be able to look ahead to the future needs of the county. For such a county the goal would be prosperous communities built on sustained forest yields and small wood-working industries, with small tillable areas serving rather as adjuncts than as the main source of income.

These and many questions of a like nature must receive careful consideration during the years immediately succeeding the war in order that farm forestry may become the practical business proposition that it must be to appeal to the American farmer, who has learned in the school of experience to distinguish to a nicety between what is theoretical and what is practical.

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